

## **Policy Statement – Data Standardization**

**Title:** Arkansas Shared Data Architecture:  
Data Standardization

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### **1.0 Purpose**

The purpose of the enterprise data model is to standardize core data throughout Arkansas state government. All new database projects must align with the core data elements defined in the Enterprise Data Model. The goal is to facilitate access to data across the boundaries of state agencies. Standardization will facilitate the ability to make inquiries against information in many different systems and will increase the likelihood of information in all the systems having the same meaning. Alignment can be in the form of actual implementation of the data architecture or through mapping to the data architecture.

### **2.0 Scope**

- 2.1** It shall be the policy of the State of Arkansas that each State agency shall work diligently to comply with the state data standardization model for all new data system implementations involving core data. The best way to encourage data sharing among state agencies is to improve awareness and understanding of the data within a single Arkansas Common Data Architecture.
- 2.2** When a data element in a database design corresponds with an element in the Enterprise Data Architecture, that element must align with the corresponding element in the Data Architecture. It is not the intent of this policy to require that elements which are not pertinent to the agency's database requirements be included in the agency's database design.

### **3.0 Background**

- 3.1** The current status of the state's data resource is characterized by data that is not completely inventoried, highly variable in content and format, highly redundant and not thoroughly understood. These disparate data hinder the information gathering necessary for effective and efficient support of the State's business activities.
- 3.2** The only reasonable way to provide quality information to support the state's business activities is to build a high quality data resource. The first step to building a high quality data resource is to begin development of a state-wide common data architecture within which all data are understood and managed. The development of an Arkansas Common Data Architecture (ACDA) should begin with core data for business entities that include person, organization, relationships between person and organizations, data security and access, and data privacy and confidentiality.

- 3.3** Since state enterprise system interoperability and information sharing are becoming increasingly important, a framework must be built that provides these capabilities. This requires that Enterprise Data Standards be defined for the State of Arkansas. Future data systems implementations must adhere to these data description standards. New off-the-shelf systems must be mapped to core data elements to provide for integration and data sharing. This will provide the data mapping necessary to allow an organized mechanism for information sharing.
- 3.4** Weight measurements are examples of standards used everyday. We understand what sixteen ounces is, can purchase measuring devices for it in stores, know it's also equal to one pound, and know it will mean sixteen ounces in Canada also. The same discipline must be applied to data to obtain standard meanings and accepted values and physical formats for data. The only data elements considered for the Arkansas Data Architecture are core data identified above, in section 3.2. Enterprise data is limited to the state's enterprise core data, which most agencies include in their systems (i.e. organization, person, address, etc).
- 3.5** The data standards have been developed using the ERwin data modeling tool to develop diagrams that represent a logical database design. A logical modeling tool such as ERwin can assist agencies in determining their data needs and in mapping their new system implementations to the state enterprise model.
- 3.6** Benefits of Data Standardization
- 3.6.1** Data Sharing: Facilitates data sharing within and between agencies where allowed by law and where mutually agreed upon by agencies.
  - 3.6.2** Reliable Data: Enterprise data standardization will allow agency personnel to be more productive and self-sufficient in their job by knowing where information is located, what the information looks like, and what the information means. When redundant systems capture the same data, it is always possible to get two different answers to the same question.
  - 3.6.3** Commonly Defined Data: Commonly defined for the enterprise, data definitions will replace individual system or silo-based definitions. Application interoperability depends on standardization, and standardization of data is only possible when the data is defined and understood.
  - 3.6.4** Accessible Information: Data standardization is the necessary first step for easy access to information, and failure to carry out this step is the leading cause of failure to make data available across systems. Data warehouse and Enterprise Application Integration (EAI) application efforts are doomed to fail without proper definition of data.
  - 3.6.5** Elimination of Redundancy: It is estimated that Social Security Numbers are duplicated multiple times across Arkansas agencies. While data standardization by itself will not eliminate such an example of data redundancy, it is the necessary first step. Once data is defined and mapped, the State of Arkansas will be in position to begin eliminating redundant data.
  - 3.6.6** Shortening of Design Process: A large part of the physical database design is built into the Arkansas data architecture model which can be used as a database design template. Using the model framework can significantly shorten the physical database design process for agencies.

## **4.0 References**

- 4.1** Arkansas Information Architecture Home Page: <http://www.cio.arkansas.gov/techarch>

- 4.2 Arkansas Enterprise Data Architecture:  
<http://www.cio.arkansas.gov/techarch/indexes/standards.htm>

## 5.0 Policy

- 5.1 For new data system implementations, state agencies shall ensure that their core data aligns with the state data architecture standards model. To assist in this effort agencies should reference Section 6 (below). Core data is data that is used by more than one system or agency, where the value of the data to State Government or the citizens of the State of Arkansas would be enhanced through standardization.

## 6.0 Procedures

- 6.1 When feasible the design of agency new core data must match the Enterprise Data Architecture. If this is not feasible the new database design must be mapped to the Enterprise Data Architecture. The Enterprise Data Architecture Model is accessible through the Arkansas Metadata Repository: <http://repository.state.ar.us/datashopper>.
- 6.2 Implementing the Data Architecture
- 6.2.1 In situations where a federal standard exists, the federal standard will take precedent over the state data architecture. However, core data complying with a federal standard must be mapped to the state data architecture.
  - 6.2.2 For each element in an agency's new database design that is contained in the Enterprise Data Architecture, the agency must align with the characteristics of the element in the data architecture.
  - 6.2.3 The valid values for the Enterprise Data Architecture must be followed when feasible.
  - 6.2.4 If the agency's new database contains values not included in the current list of valid values, then the new value definitions must be defined consistent with the established values in the Data Architecture.  
  
Example: Citizenship; Citizen by birth = B; Naturalized Citizen = N; if agency wants to add "student visa", the logical code for that would = "S".
  - 6.2.5 When an agency determines new values for data contained in the data architecture, the information must be submitted to the Information Architecture Working Group so that it can be added to the Enterprise Metadata Repository. Submit information to [SharedArchitecture@arkansas.gov](mailto:SharedArchitecture@arkansas.gov).
- 6.3 Mapping to Data Architecture
- 6.3.1 When it is not possible to match the Enterprise Data Architecture, it is acceptable to map the elements contained in the agency database design to the Enterprise Data Architecture. Mapping must include data names, physical characteristics, and valid values.
  - 6.3.2 Technical metadata is information about column width, data types and other technical information that would be useful to a programmer or database administrator. Establishing these standards does not require agencies to change all legacy systems to match the standards. However, a data mapping from legacy or off-the-shelf systems to the data standard can establish a relationship for reference. The standards must be used in conjunction with the implementation of new projects.
  - 6.3.3 The following is an example of a possible standard and how it might be used for "Person" and "Last Name". The business users have defined Person as, "An

individual human being as distinguished from an animal or thing. A Person may be living or deceased and is recognized by law as the subject of rights and duties. A Person might fill many roles including employee, recipient, customer etc.”

Last Name: “Last Name is the legal surname of a Person.”

*Technical Metadata:*

| Technical Metadata | Value     |
|--------------------|-----------|
| Table Name         | Person    |
| Column Name        | LastName  |
| Datatype           | Character |
| Length             | 20        |

*Legacy Data Mapping Example:*

Suppose a legacy system called ABC uses a data item named “LNAME” in a table called “Recipient”. First it may be determined that “Recipient” is a type of “Person” and that “LNAME” is actually an occurrence of LastName. We will then know that when we are searching for a person’s last name that when we look at ABC we are looking for a table called “Recipient” and a column named “LNAME.” It will then be possible to make access to this data transparent to an end user.

## 7.0 Revision History

| Date       | Description of Change                 |
|------------|---------------------------------------|
| 07/30/2002 | Original Policy Statement Published   |
| 08/01/2003 | Revisions made (update to hyperlinks) |
| 07/15/2005 | Links updated, headers updated        |

## 8.0 Definitions

- 8.1** Core data is data used by more than one system or agency, where the value of the data to State Government or the citizens of the State of Arkansas would be enhanced through standardization. Refer to the Enterprise Data Architecture:  
<http://repository.state.ar.us/datashopper>
- 8.2** Data Architecture refers to the collection, organization, design, and management of information used in applications. The information may be in a variety of formats including numbers, text, graphics, audio, geographic (Geographic Information or GIS Systems), or combination of formats.
- 8.3** Data Model is a graphic representation that identifies the structure, content and relationships of the information used by an organization's business systems (manual or automated, or both). A Data Model is the specification of data structures and business rules to represent business requirements.
- 8.4** Logical Data Model is a specification of what information and what business rules are required to support the business. The logical data model represents a view of an organizations data from a business perspective.
- 8.5** Metadata is "data about data"; metadata includes data associated with either an information system or an information object for purposes of description, administration, legal requirements, technical functionality, use and usage, and preservation.

## **9.0 Related Resources**

**9.1** Arkansas Metadata Repository: <http://repository.state.ar.us/datashopper>

**9.2** Information Architecture Working Group: <http://www.cio.arkansas.gov/techarch>

## **10.0 Inquiries**

Direct inquiries about this policy to:

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Shared Technical Architecture

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OIT policies can be found on the Internet at: <http://www.cio.arkansas.gov/techarch>.

## **11.0 Attachments**

As required